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AUTHOR Beasley, Martha; Wark, Alan; Zimmerman, Sara
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ABSTRACT

A model for gender equity in a rural Appalachia school system is approaching its second year of implementation at the high school level. This model focuses on equity issues, student motivation, and nontraditional coursework. In addition, it addresses career awareness for females, including a strong emphasis on technology and the sciences. Specific objectives are to: (1) establish higher expectations of female students in academic and vocational classes; (2) implement career exposure activities that provide female students information on nontraditional careers; (3) provide female students with a curriculum which integrates academic and work experiences; (4) provide female students with career and social guidance and counseling; (5) evaluate female students' progression through motivational and attitudinal assessments; and (6) include multiple resources in creating a gender equity program. The model is composed of three distinct stages; the first stage requires career interest surveys and assessments, a pre-test on school interests and motivators, and forming of individual student advisory committees. The second stage promotes activities and initiatives to enhance student motivation, morale, an self-confidence, and involves a course for the enhancement of team problem-solving and decision-making, goal-setting, team building, and communication. The third stage requires hands-on job experiences and placements requiring a minimum of 50 hours of work with local employers in nontraditional fields of study for females. (AEF)

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By:

Martha Beasley
Alan Wark
Sara Zimmerman

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Gender Equity Model: High School Female Students and Technology Awareness

Martha Beasley
E.Tennessee State University

Alan Wark
Appalachian State University

Sara Zimmerman
Appalachian State University

A powerful force in today's technology field addresses such issues as equitable educational environments, student motivation, and systemic approaches to decision-making processes involving secondary, post-secondary, and career awareness. The current Gender Equity Model evolved from these critical issues based on findings such as those from the *AAUW Report Executive Summary* (1992):

1. Girls from low-income families face particularly severe obstacles to academic success. Socioeconomic status, more than any other variable, affects access to school resources and educational outcomes.
2. Test scores of low-socioeconomic-status girls are somewhat better than for boys from the same background in the lower grades, but by high school these differences disappear. Among high-socioeconomic-status students, boys generally outperform girls regardless of race and ethnicity.
3. Too little information is available on differences among various groups of girls. While African Americans are compared to whites, or boys to girls, relatively few studies or published data examine differences by gender and race and ethnicity.
4. Differences between girls and boys in math achievement are small and declining. Yet in high school, girls are still less likely than boys to take the most advanced courses and be in the top-scoring math groups.
5. The gender gap in science, however, is not decreasing and may, in fact, be increasing.
6. Even girls who are highly competent in math and science are much less likely to pursue scientific or technological careers than are their male classmates. (pp.3-4).

With these findings in mind, a model for gender equity in a rural Appalachia school system is approaching its second year of implementation at the high school level. This model focuses on equity issues, student motivation, and nontraditional course work. In addition, it addresses career awareness for females, including a strong emphasis on technology and the sciences. Specific objectives are the following:

1. To establish higher expectations of female students in both academic and vocational classes.
2. To implement career exposure activities that provide female students information on nontraditional careers.
3. To provide women students with a curriculum which integrates academic and work experiences.
4. To provide female students with career and social guidance and counseling.
5. To evaluate female students' progression through motivational and attitudinal assessments.
6. To include multiple resources in creating a gender equity program.

Selection Process and Qualifying Criteria of Participants

The selected participants demonstrated interest in such areas and courses as Technology/Manufacturing, Principles of Technology, and Integrated Systems Technology. These courses enable students to work as individuals and in teams on designing and constructing projects using plastics, pneumatics, hydraulics, robotics, electronics, metals, metal testing, foundry, welding, and technical drafting. This course work also emphasized computer skills throughout. Female participation and enrollment is generally low in these specific courses (i.e., 10% or less). Other classes viewed as important in this selection process include science courses with a focus on technological labs using electronic evaluations and experiments, and various agricultural and horticultural fields.

Another factor considered in the selection process includes a focus on a targeted population of females. This targeted population consists of those students who are from economically and socially disadvantaged backgrounds, as well as students who possess future expectations and goals for a post-secondary education.

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The Three Stages in the Gender Equity Model

The Gender Equity Model funded through a federal grant, is in its second year of implementation. The model is composed of three distinct stages for the enhancement of courses and careers in nontraditional fields for females. The first stage requires career interest surveys and assessments, a pre-test on school interests and motivators, and the forming of individual student advisory committees. The second stage involves activities and a ropes course for the enhancement of team activities in problem-solving and decision-making processes, goal-setting, team building, and communication processes. The third stage requires hands-on job experiences and placements requiring a minimum of fifty hours work with local employers in the interested, nontraditional fields of study for females.

Stage One

In conjunction with additional goals and objectives within this particular high school setting, this equity program assisted in creating a complete computer lab that includes an entire course and a career counseling program. The career and counseling center will assess student interests and potential in a wide range of courses and careers. Student schedules will be applied to match students' academic needs and expectations. To provide smooth transitions between grades, the center will also focus on assessments from middle-school course interests and data. The equity program supplied career software to the middle schools that feed into the targeted high school. The middle-school software matches that of the high school, except it is on a middle-school level and in a simpler format. Students at all levels learn to utilize computer skills in the computer lab setting as personal student data and assessments are collected.

In order to implement a usable and friendly program, first-year female students participating in the equity program viewed various programs prior to the purchase of the current program. These students gained extensive experience in a variety of career assessment programs. Currently, computerized surveys assess participants' career interests as they explore and learn about various nontraditional careers for females. This software program also offers extensive data on needed secondary and post-secondary course work. In addition, information is available on universities offering such degrees, the need for individuals with these degrees, salaries, and available scholarship money. This information becomes part of the criteria for students as they consider future choices and career paths with counselors and parents.

A second part of the initial stage in the equity program involves an assessment on student motivation and attitude toward school. Subscales include motivation for schooling, academic self-concept, student's sense of control over performance, and student's instructional mastery. This attitudinal and motivational assessment serves as a pre-test and as a post-test of the participants.

In addition to these preliminary activities, the program assigns students to advisory committees which can consist of school guidance counselors, teachers, parents, business mentors, equity and school partnership directors, and the student.

Stage Two

The second stage of the model promotes activities and initiatives to enhance student motivation, morale, and self-confidence. Activities in socially-arranged groups range from student luncheons, helpful videos related to nontraditional careers and course work, team building games and activities, to a ropes course. Specific goals of these activities relate directly to problem-solving and decision-making processes, goal-setting, team building, and communication processes.

The literature on group interactions and group dynamics, which are considered a vital part of the growth in a group, provides support for these activities and their outcomes (Bertcher, 1979; Bertcher & Mapel, 1977; Dye, Gardner, Underwood & Clark, 1987; Fraus, 1979; Griffin & Patton, 1971; Kamii & DeVries, 1981; Reeves, 1970). Shaw (1981) states that the results of group interactions include higher levels of energy focused on goal attainment, along with more motivation to achieve group goals. Shaw explains that higher levels of trust are created when group interactions occur, causing group cohesiveness. Motivational factors continue to be stressed as a vital component of learning experiences and the acquisition of knowledge within a social context (Bandura, 1986). According to Cartwright (1968), other positive outcomes of group interactions are effective group interaction involving decision-making and group problem-solving processes, greater participation, and higher self-esteem. Ancona, Kochan, Scully, Van Maanen, and Westney (1996), refer to group decision-making as advantageous over decisions made by individuals, particularly in today's competitive world. Advantages include greater access to information and knowledge within a group of individuals, the enhancement of coordination among the various parts of the group, and the establishment of a communication network to facilitate problem-solving. As these outcomes relate to the specific program objectives of creating an awareness and involvement in nontraditional roles for the female participants, the authors assess them through the motivational and attitudinal tests, along with qualitative data.

Stage Three

The third and final stage of the model requires hands-on job experiences and placements requiring a minimum of fifty work hours with local employers in the nontraditional fields of study for females. The majority of these placements promote knowledge and application of various technology skills in a wide range of fields such as drafting,

architectural landscaping, the formation of one's own business, and several work experiences in technological communication.

School Staff and Community Awareness

Another component of this equity model incorporates the utilization of various community resources including local businesses and employers. Through this partnership, school staff receive professional development in such topics as gender and technology issues; integrated teaching, learning, and motivating through the use of computers; and the use of newly-purchased software and technological hardware. Administrators, counselors, and teachers have been active participants in this staff development. Community awareness is enhanced through the communication and involvement of students working in the community and with local businesses.

Continuous Research on the Equity Program

Following the first year of implementation of this model, results were analyzed through both quantitative and qualitative methodology. Findings from qualitative data (through student presentations and interviews) reflected a high success rate on career awareness and self-confidence in relation to the attainment of set goals. Several of the high school seniors made definite decisions, following their experience, to pursue a post-secondary education in the areas of their personal nontraditional experiences.

Quantitative data reflected improvement and gains in various areas, as obtained through the *School Attitude Measure* (American Testronics, 1990). Analyses of this data showed the ninth grade class demonstrated the greatest gains in overall school attitude, specifically in the first subscale which focuses on motivation for schooling. This subscale contains statements concerned with the student's motivation for working hard in school, desire to perform competently in school, and the student's perception of the importance of school and how it relates to future plans. Tenth grade scores indicated improvement in both academic self-concept, performance and reference based abilities. These scales assess a student's feelings about school performance and confidence in academic ability. In grade twelve, greater gains were shown in a combination of two areas, academic self-concept performance based and the sense of control over performance. The sense of control subscale measures the amount of control a student feels she has over school outcomes. General components include willingness to take responsibility for school outcomes, self-reliance, and independence in school. Overall, across all grades and subscales, 61% of the female participants demonstrated an improvement between the original pretest and posttest scores.

This equity model program is beginning its second year of implementation. The authors will continue to conduct research on many of these same students, along with the new participants in the program. In addition, research will include interviews and surveys conducted on the graduating participants as they continue their education on a post-secondary level in a nontraditional career for females.

Future Use of Equity Programs

Due to the newness of research on such programs, it is difficult to predict the outcomes that each individual experiences and will experience in the future, but the analyses of this model suggest that equity programs, such as this one, are in great need and demand within our educational system. This model incorporates equity issues with nontraditional career decisions through technology awareness and discovery. As many participants enter, continue and graduate from the program to pursue education and careers in the various nontraditional fields for females, additional findings will emerge from the program.

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Martha Beasley is Instructor of Curriculum and Instruction in the College of Education, East Tennessee State University, Johnson City, Tennessee 37614. Office and fax: 423 439-8444, 423 439-8362. Home voice: 704 898-5[illegible]
E-mail: beasleym@Access.ETSU.edu.

Alan Wark is the owner of Transformational Systems for public school grant writing at Appalachian State University, 6760 Boone, North Carolina . Office: 910 877-3869.

Sara Zimmerman is Professor of Curriculum and Instruction in the College of Education, Appalachian State University, Edwin Duncan Bldg., Boone, North Carolina. Office: 704 262-2216.
E-mail: ZIMMERMNSJ@appstate.edu.